

Erratum: Nuclear electric dipole moments in chiral effective field theory

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As first observed in ref. [1], the usual weight factors of the neutron (d_n) and proton (d_p) single-nucleon contribution to the electric dipole moment of the deuteron are lacking a small wave-function-dependent term resulting from the subleading 3D_1 component of the deuteron wave function. A simple calculation reveals that the total single-nucleon contribution is

$$d_{2\text{H},\text{single}} = \left(1 - \frac{3}{2} P_D\right) (d_n + d_p),$$

where P_D is the probability of the deuteron 3D_1 -state, which of course depends on the choice of the wave function.

Therefore the values 1.00 of the d_n and d_p weight factors have to be modified in the following places of our paper [2]:

- (i) in the first two rows of table 1, see the enclosed table 1',

label	N ² LO χ EFT	Av_{18}	CD-Bonn	units
d_n	0.939 ± 0.009	0.914	0.927	d_n
d_p	0.939 ± 0.009	0.914	0.927	d_p
g_1	-0.183 ± 0.017	-0.186	-0.186	$g_1 \text{ e fm}$
Δf_{g_1}	0.748 ± 0.138	0.703	0.719	$\Delta \text{ e fm}$

Table 1’. The new entries of table 1. Captions as in table 1. Note that the new d_n and d_p weight factors displayed for the Av_{18} potential exactly agree with the ones of ref. [1].

(ii) in the first bracket on the right-hand side of eq. (3.2),

$$d_{2H} = (0.939 \pm 0.009)(d_n + d_p) - [(0.183 \pm 0.017) g_1 - (0.748 \pm 0.138) \Delta] \text{ e fm} , \quad (3.2')$$

(iii) implicitly in the first bracket of eq. (4.9),

$$d_{2H}^\theta = \bar{\theta} \cdot \left\{ [(0.56 \pm 0.01 \pm 1.59)] - (0.62 \pm 0.06 \pm 0.28) - (0.28 \pm 0.05 \pm 0.07) \right\} \cdot 10^{-16} \text{ e cm} , \quad (4.9')$$

such that “ (0.6 ± 1.7) ” is replaced by “ $(0.56 \pm 0.01 \pm 1.59)$ ”, where the first uncertainty is the nuclear one, while the second is the hadronic one,

(iv) explicitly on the left-hand side of eq. (4.10),

$$d_{2H}^\theta - 0.94(d_p^\theta + d_n^\theta) = -\bar{\theta} \cdot (0.89 \pm 0.30) \cdot 10^{-16} \text{ e cm} , \quad (4.10')$$

(v) and on the left-hand side of eq. (5.5),

$$\begin{aligned} d_{2H}^{LR} - 0.94(d_p^{LR} + d_n^{LR}) &= \Delta^{LR} [(1.37 \pm 0.13 \pm 0.41) + (0.75 \pm 0.14) \pm 0.1] \text{ e fm} \\ &= \Delta^{LR} (2.1 \pm 0.5) \text{ e fm} . \end{aligned} \quad (5.5')$$

In the latter two cases the uncertainty of the single-nucleon contributions can safely be neglected.

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References

- [1] N. Yamanaka and E. Hiyama, *Enhancement of the CP-odd effect in the nuclear electric dipole moment of ${}^6\text{Li}$* , [arXiv:1503.04446](https://arxiv.org/abs/1503.04446) [[INSPIRE](#)].
- [2] J. Bsaisou et al., *Nuclear electric dipole moments in chiral effective field theory*, *JHEP* **03** (2015) 104 [[arXiv:1411.5804](https://arxiv.org/abs/1411.5804)] [[INSPIRE](#)].